

Effects of compression stockings on pain, fatigue, and quality of life among female hairdressers with varicose veins

Effects of compression stockings among hairdressers with varicose veins

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Abstract

Aim: Varicose veins, is one of the complications of a long standing position. Female hairdressers are among those individuals undergoing prolonged standing during the day which can have negative impacts on their quality of life. The purpose of the present study was to evaluate the effects of compression stockings on quality of life among female hairdressers suffering from varicose veins in the lower extremities (limbs). **Material and Method:** The statistical population included all female hairdressers in the city of Hamadan referred to Mahdieh Clinic. Using simple random sampling method, 70 individuals were selected out of the hairdressers suffered from varicose veins and then they were divided into two groups of intervention and control. The intervention implemented in this study was the use of compression stockings. The participants completed three questionnaires as follows: the Aberdeen Varicose Veins Questionnaire, the Chronic Pain Grade Scale, and the Muscle Fatigue Questionnaire in Lower Extremities. **Results:** The results showed that intervention could affect the scores associated with pain and swelling as well as the scores assigned to muscle fatigue in the left and right lower extremities among the intervention group and the given values also declined by 1.68, 0.57, and 0.65, respectively. Moreover, the implementation of intervention had a negative impact on the scores for varicose veins in a way that it increased by 0.9 following the intervention. **Discussion:** The use of compression stockings had a positive effect on reducing pain and muscle fatigue, but apparently that effectiveness could not influence the quality of life in patients suffering from varicose veins.

Keywords

Varicose Veins; Compression Stockings; Quality of Working Life

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Introduction

Varicose veins as a vascular disease are taken into account as one of the most common health problems [1] that is often neglected until its serious symptoms are revealed. Such a disease is closely associated with prolonged standing; thus, the standing position of a job is among important factors affecting its development. This fact has been mentioned in many studies. In a study in Taiwan, the relationship between prolonged standing and varicose veins was confirmed [2]. There have been also various reports associated with the prevalence of varicose veins in different populations. It is estimated that the prevalence rate of varicose veins in adults varies between 7% and 40% in men and between 14% and 51% in women [1,3]. In another study, the prevalence rate of varicose veins was reported by 18.7% in Asian nations [4].

The important risk factors associated with such a vascular disease include gender, weight, family history, and the number of births [5]. The most important symptoms of the disease are feeling of heaviness in the legs, pain and swelling, fatigue, as well as dry skin and itching [2,5]. The varicose veins disease is graded into 1) normal varicose veins, 2) varicose veins and venous edema, 3) varicose veins and skin changes, 4) varicose veins and healed wounds, and 5) varicose veins and active wounds [6]. To deal with such a disease, home treatment procedures such as changes in lifestyle are firstly recommended which includes doing regular and daily exercises as well as reaching the ideal weight. Moreover, the use of compression stockings has been suggested as a treatment in this respect. Use of compression stockings is a simple home intervention which helps patients to reduce the symptoms of varicose veins in the legs. In this way, compression stockings improve blood circulation in the legs through increasing pressure. Such stockings are available in a variety of styles on the market and their main function is to compress the legs. Thus, care professionals can prescribe a pair of appropriate stockings for individuals suffering from varicose veins. Nevertheless, the effects of compression stockings in previous studies have not been consistent. For example, in a systematic review conducted on the effects of compression stockings in 2009, the results revealed ambiguities in terms of the beneficial effects of compression stockings on varicose veins [7]. In another study conducted in 2011, researchers also found similar results [8]. Such stockings are usually sold in medical equipment stores. In more serious cases of varicose veins, other treatment procedures such as sclerotherapy, laser therapy, surgery, and most recently the use of radio frequency device by physicians have been recommended [9].

Since hairdressers are among the workforce who has to work in a standing position for long hours during the day, they are exposed to the risk of varicose veins. Over the time, physical disabilities affecting an individual can reduce the quality of life and consequently lower their efficiency. Therefore, there is a need to review this issue and take measures in order to control and prevent such a vascular disease. As it was stated, one of the simple and low-cost interventions in this respect is wearing compression stockings but due to the conflicting results of the related literature concerning the effects of compression stockings; the present study aimed to examine whether the use of compression stockings can have effects on indicators

associated with pain, swelling, fatigue, as well as scores for the types of varicose veins or not.

Material and Methods

Design and participant

This controlled randomized trial study was conducted among female hairdressers in the city of Hamadan referred to Mahdiah Clinic No. 2. A total number of 70 patients whose varicose veins disease had been diagnosed by physicians were selected through simple random sampling method and then they were assigned into two groups (intervention and control) of 35 individuals.

Instruments

In this study, quality of working life associated with varicose veins was measured via three indices of varicose veins, chronic pain, and muscle fatigue. The data collection instruments also included demographic properties questionnaire as well as three other questionnaires including Aberdeen Varicose Veins Questionnaire (AVVQ), Chronic Pain Grade Scale (CPGS), and Muscle Fatigue Questionnaire (MFQ) in Lower Extremities.

Aberdeen Varicose Veins Questionnaire (AVVQ)

This questionnaire was designed to assess the quality of life in patients affected with varicose veins which consisted of 13 items [10]. In a study conducted by Clem et al. in the Netherlands in 2009, the validity and the reliability of the original form and its Dutch translation were confirmed [11,12]. The Cronbach's alpha coefficient was also used to determine the reliability of the questionnaire which was equal to 0.81 indicating desirable reliability for the given inventory.

Chronic Pain Grade Questionnaire (CPGQ)

The questionnaire contains 25 items. After reading each item, an individual can rate their pain on a six-point scale in which the options respectively include never, very low, low, average, high, and very high. Finally, the numerical values related to the options selected are summed. The content validity and reliability of the given questionnaire have been approved.

Muscle Fatigue Questionnaire (MFQ) in Lower Extremities

This questionnaire measures the amount of muscle fatigue in the lower back, posterior legs, and anterior legs in the left and right lower extremities. The respondents complete six items with 5 options including no fatigue, limited fatigue, moderate fatigue, very fatigued, and extreme fatigue. The questionnaire was adapted from a research paper entitled "Assessment of muscle fatigue associated with prolonged standing in the workplace" which was conducted by Isa Halim et al. in Malaysia in 2012 [13]. The Cronbach's alpha coefficient was similarly used in this study to determine the reliability of the questionnaire which was equal to 0.88.

Following the completion of the given questionnaires, the compression stockings were delivered to the intervention group and the subjects were requested to wear them at their workplace and take them off only in their leisure time.

Intervention

The participants were asked to wear the compression stockings (ADOR, Faraz Gostar Farham co., Iran) during the work and put them out at the rest time. The stockings were of AD size which covered feet and lower legs. As mentioned before, the intervention period was three months. After a 3-month period, the subjects were asked to complete the questionnaires for the second time. It should be mentioned that all participants completed the study.

Data analysis

The data analysis was performed using the SPSS18 software including descriptive indices of mean and standard deviation as well as paired-samples t-test. The research hypotheses were also tested with a confidence level of 0.05.

Results

As can be seen in Tables 1 and 2, no significant difference was found between the two study groups in terms of qualitative and quantitative demographic characteristics.

To evaluate the changes in the pain, muscle fatigue, and quality of life of patients before and after intervention in both groups, paired-samples t-test was used and results are demonstrated in Table 3.

Table 1. Examining the homogeneity of the sample studied in terms of quantitative demographic variables

Variable	Intervention group M (SD)	Control M (SD)	p-value
Age (year)	43.22 (8.77)	44.17 (10.31)	0.68
Work experience (year)	15.2 (7.49)	17.37 (9)	0.28
BMI	27.71 (4.52)	25.96 (3.13)	0.17

Table 2. Examining the homogeneity of the sample studied in terms of qualitative demographic variables

	Level	Intervention (stocking)	Control	p-value
Amount of exercise during the day	Less than 30 minutes	25	29	0.28
	30 to 60 minutes	8	6	
	More than 60 minutes	2	0	
Level of Education	Less than a diploma	17	14	0.63
	Diploma to Bachelor	18	21	
	normal varicose veins	22	25	
Degree of varicose veins	varicose veins and venous edema	9	6	0.67
	varicose veins and skin changes	4	4	

According to the findings presented in Table 3, the scores of varicose veins increased but the rise in such values was not significant. Moreover, the mean scores for pain and fatigue on the left side and fatigue on the right side in lower extremities significantly decreased in the intervention group.

Table 3. The changes in pain, muscle fatigue, and quality of life patients before and after intervention in both groups

Group	Level	M (SD)	T	p-value
Intervention (stocking)	Pain (pre)	32.4 (28.49)	2.55	0.015
	Pain (pos)	30.7 (26.31)		
	Muscle fatigue in the left side (pre)	6.34 (3.58)	2.31	0.027
	Muscle fatigue in the left side (pos)	5.77 (3.21)		
	Muscle fatigue in the right side (pre)	6.65 (3.47)	2.75	0.009
	Muscle fatigue in the right side (pos)	6.31 (3.10)		
	Quality of life (pre)	19.53 (10.05)	-1.1	0.27
	Quality of life (pos)	20.43 (10.13)		
	Control	Pain (pre)	26.97 (24.33)	-2.55
Pain (pos)		29.97 (24.66)		
Muscle fatigue in the left side (pre)		5.62 (2.86)	4.96	0.001
Muscle fatigue in the left side (pos)		6.94 (2.78)		
Muscle fatigue in the right side (pre)		5.82 (3.01)	-4.94	0.001
Muscle fatigue in the right side (pos)		7.17 (2.83)		
Quality of life (pre)		21.83 (14.35)	-2.28	0.029
Quality of life (pos)		23.34 (14.03)		

Discussion

Varicose veins in lower extremities are considered as one of the most common occupational diseases that occur due to long-term standing and it is intensified over time. Given the working conditions of female hairdressers in which they have to experience prolonged standing during the day, the present study aimed to examine whether the use of compression stockings can help in relieving varicose veins as a vascular disease in this community or not.

The results of this study indicated that the prevalence rate of varicose veins disease among female hairdressers was 34.5%. In the same findings by Zhigler et al., the prevalence rate of chronic venous diseases in the lower extremities among hospital personnel were reported equal to 34% [14]. In another investigation in the city of Shanghai in China by Sun JM in 1990 on 30712 workers over 15 years old in various industries, a prevalence rate equal to 83% was observed in terms of varicose veins in the lower extremities [15]. In a further study conducted by Sharifnia et al. (2010), a high prevalence rate of varicose veins in the lower extremities was reported in nurses [16]. Moreover, Touchson et al. found that the prevalence of varicose veins varied from 2% to 56% in men and 1% to 73% in women [17]. In the present study, the mean difference of pain scores reduced before and after the intervention in the intervention group using compression stockings. The fatigue scores of left and right sides as well dropped compared to the pre-intervention stage. But scores assigned to varicose veins increased in individuals wearing compression stockings. Therefore, it was concluded that compression stockings had a positive effect on levels of pain and fatigue, but they had a negative impact on varicose veins and led to a rise in scores assigned to varicose veins. In a similar study, Palfreyman S et

al. reached uncertainties associated with the beneficial effects of wearing compression stockings in order to reduce the rate of progression or prevent recurrence of varicose veins which could not support published evidence although compression stockings have been widely used in the prevention of symptoms associated with this vascular disease. The evidence on the usefulness and effectiveness of compression stockings in this respect have been also ambiguous and published research papers in this field have obtained conflicting results [7]. Shingler S et al. also concluded that compression stockings were not sufficient as the only treatment and they could only reduce symptoms such as pain and itching as reported by the study subjects [18].

Higher scores assigned to varicose veins in these patients following intervention through compression stockings may be also due to the increased public awareness towards the disease and also their greater sensitivity to this health problem. Since at the onset of this study it was found that a lot of subjects did not have any knowledge of varicose veins disease; they were likely to get more sensitive to the symptoms of such a disease in their limbs while completing the questionnaires over the 3 months of intervention. Undoubtedly, this community would spend much more time at workplace over the year than the normal working time and as this 3-month intervention occurred at the peak of their work, all these issues could have their own effects on higher scores for varicose veins despite the use of compression stockings.

In conclusion, the findings of this study revealed that compression stockings as an ergonomic intervention in terms of reducing pain and fatigue in the lower extremities in jobs involving prolonged standing during the day could be useful and functional. However, compression stockings are not adequate in terms of treatment or prevention of the development of varicose veins and their effects are reduced as the degree of varicose veins is increased. In other words, varicose veins progression leads to lower effects of compression stockings. Thus, individuals working in the medical field and treatment of patients with varicose veins are recommended not to prescribe compression stockings for individuals suffering from advanced and chronic degrees of varicose veins disease. In these individuals, other interventions such as sport protocols, aerobic training can be used, which their effectiveness on cardiovascular system and body fitness in previous studies have been confirmed [19,20]. Thus, such compression stockings can be used only in the early and mild stages of the disease and in order to prevent infection among individuals with a family history of such a disease and also people with prolonged standing or pregnancy, or even those subjected to other risk factors.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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